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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,959	09/23/2003	Haiyou Wang	17462-5	4777

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EXAMINER

NGUYEN, CAM N

ART UNIT PAPER NUMBER

1754

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/669,959

Applicant(s)

WANG ET AL.

Examiner

Cam N Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 07/19/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 & 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choudhary et al., "hereinafter Choudhary", (US Pat. 5,756,421) in view of Richter et al., "hereinafter Richter", (US Pat. 3,674,710).

Choudhary discloses a process of preparing a composite catalyst which is useful for oxidative conversion of methane or natural gas to H₂ and CO or synthesis gas, said composite catalyst consisting of transitional and alkaline earth metal oxides and having the formula: T_mAO_n, wherein T is a transitional element selected from the group consisting of Ni, Co, Pd, Ru, Rh, Ir and mixtures thereof, wherein m is a mole ratio equal to T/A, said mole ratio being about 0.01 to about 10; wherein A is an alkaline earth element selected from the group consisting of Mg, Ca, Ba, Sr, and mixtures thereof; wherein O is oxygen and n is a number of oxygen atoms needed to complete the valence requirement of the transitional and alkaline earth elements in the catalyst; said process consisting essentially of the following steps: (i) mixing thoroughly, without water or with addition of an amount of water just sufficient to make a thick paste catalyst

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precursors consisting essentially of: (a) one or more finely ground transitional metal compounds represented by the formula TX_a ; wherein T is the transitional element; wherein X is selected from the group consisting of NO_3 , etc.; and (b) one or more finely ground alkaline earth metal compounds represented by the formula AY_b ; wherein A is the alkaline earth element; wherein Y is selected from the group consisting of NO_3 , etc.; said catalyst precursor having a T/A mole ratio of about 0.01 to about 10; (ii) if the mixing in step (i) is performed with the addition of water, heating the mixture of catalyst precursors to dryness to a temperature of about $80^{\circ}C$ to $250^{\circ}C$ in air or under vacuum to form a dried mass; (iii) decomposing the mixture of catalyst precursors of step (i) or the dried mass containing catalyst precursors of step (ii) to their oxides at a temperature of between about $500^{\circ}C$ and $1200^{\circ}C$ in the presence of air or inert gas or under vacuum for a time sufficient to form a decomposed mass, etc. ; (iv) powdering the decomposed mass and forming the powdered decomposed mass under pressure; and (v) calcining the catalyst in the presence of air, inert gas, CO or their mixture or under vacuum at a calcination temperature and for a calcination time sufficient to obtain a catalyst effective in catalyzing a conversion of methane in a reactant mixture, etc., said calcination temperature being at least $600^{\circ}C$ (see col. 13- col. 14, claim 1). The transitional element T is Ni or Co or their mixture, and the alkaline earth element A is Mg, Ca, or a mixture thereof (see col. 14, claims 2 & 3). The process further comprising reducing the catalyst with H_2 (see col. 14, claim 13).

Choudhary discloses a catalyst composition containing Ni and Mg, and the claimed Ni to Mg mole ratios, and process of preparing thereof, except for the "percent weight of Ni being ranging from about 15% to 95% in the metallic state and greater than 25% in the active state" (as specified in claims 1 & 14).

However, it would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have optimized the nickel concentrations in the process of Choudhary in order to achieve an effective catalyst or a catalyst composition having the desired Ni concentrations because it is known in Richter to produce a catalyst having Ni in the amount of up to 89.5% by weight (see Richter at col. 6, claim 2, & see also claims 3-7).

3. Claims 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choudhary et al., "hereinafter Choudhary", (US Pat. 5,756,421) in view of Richter et al., "hereinafter Richter", (US Pat. 3,674,710) and Bournonville et al., "hereinafter Bournonville", (US Pat. 4,380,673).

Choudhary and Richter disclose a catalyst composition as described above, except for the "Cu", and the "molar ratio of Ni to Cu".

It would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have incorporated Cu into the catalyst composition of Choudhary in order to achieve an improved catalyst having higher catalytic activity because it is known in the art to add additional metal component, such as Cu, to the nickel catalyst to result in a catalytic reaction catalyst, as evidenced by Bournonville (see Bournonville at col. 11, claim 1).

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Citations

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 Form prepared attached. All references are cited for related art.

Conclusion

5. Claims 1-20 are originally pending in the application. Claims 1-20 are rejected. No claims are allowed.
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Cam Nguyen, whose telephone number is (571) 272-1357. The examiner can normally be reached on M-F from 9:30 am. to 6:00 pm.

The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to telephone number (571) 272-1700.

Nguyen/cnn *cnn*

December 04, 2004

Cam Nguyen
CAM N. NGUYEN
PRIMARY EXAMINER

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